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standards of the Milton Bradley Co., as contained in this book of Professor Mulliken's, it would be possible to accurately describe and identify the exact shade of the characteristic sample dyeings, without pasting a single sample in the book. And, by a proper system of classification, the chemist attempting to identify a color, after determining its class, and dyeing a sample, would determine its exact place in the color table, and so avoid the necessity of hunting it up in the sample books of the different color houses, or in his own sets of home-made samples.

To be of real value, such a treatise should be written by a well-trained color chemist, thoroughly familiar with the dyestuffs of today, from their practical side, and accustomed to face, in his regular work, the many and varied problems in textiles, paper-making, pigments, food products and the like, which appear every day in a large dyeing laboratory.

The theoretical part of such a book could be easily obtained from the treatises we have at present, including this one of Professor Mulliken's. But the use of the color standard would give opportunity for identifying the shades with a minimum of trouble and expense; and if the writer would incorporate some of the regular laboratory information about methods, and about the practical peculiarities of the different dyestuffs, their ease of dyeing, comparative fastness, special uses, cost prices as compared to others of the same or different classes, and a host of other minor matters of practical interest to users and workers with the dyestuffs, such a book would be hailed with enthusiasm by dyeing chemists from one end of the world to the other.

CHARLES E. PELLEW

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#### SCIENTIFIC JOURNALS AND ARTICLES

THE contents of the *American Journal of Mathematics* for October are:

"*q*-Difference Equations," by Rev. F. H. Jackson.

"On the Relation between the Sum-formulas of Hölder and Cesàro," by Walter B. Ford.

"Sur un Exemple de Fonction Analytique Partout Continue," par D. Pompeiu.

"Symmetric Binary Forms and Involutions," by Arthur B. Coble.

"Systems of Tautochrones in a General Field of Force," by Harry Wilfred Reddick.

"The General Transformation Theory of Differential Elements," by Edward Kasner.

#### BOTANICAL NOTES

##### TWO RECENT BOOKS ON LICHENS

WITHIN a few weeks of each other two notable contributions to our knowledge of the lichens of this country have been issued. The first is Albert W. C. T. Herre's "Lichens Flora of the Santa Cruz Peninsula, California," published in the *Proceedings of the Washington Academy of Sciences* (Vol. XII., No. 2) and bearing date of May 15, 1910; while the second is Bruce Fink's "Lichens of Minnesota" published in the Contributions from the United States National Herbarium (Vol. 14, Part 1) and bearing date of June 1, 1910. The first contains 243 pages, and the second 256 pages, with 51 plates and 18 text-figures. They are both nominally local lichen floras, and judged by their titles alone might be supposed to present a similar mode of treatment. However a comparative examination of the two works shows a marked difference between them. Thus while both accept Zahlbruckner's general understanding of the lichens, the first author proceeds at once to the descriptive part of his book, evidently assuming that the reader will bring to its perusal all the necessary knowledge for its full understanding. In Professor Fink's book, on the contrary, there is an explanatory introduction in which there is a discussion of the nature of lichens, and the views that have prevailed during the past two centuries. This is followed by a particular discussion of what is known of their structure and reproduction, including under the latter sexual reproduction. Here he says "the sexual processes have not been studied in very many of the fungi most closely related to the lichens, but recent discoveries seem to indicate that sexuality is common there and in the ascomycetous lichens as well. In Collema, Stahl and others have found that the apothecium is